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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/811,101	03/16/2001	Richard Ronald Hall	END920000087US1 (IEN-10-5)	8303

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EXAMINER

DINH, TUAN T

ART UNIT PAPER NUMBER

2827

DATE MAILED: 01/09/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

**Application No.**

09/811,101

**Applicant(s)**

HALL ET AL.

**Examiner**

Tuan T Dinh

**Art Unit**

2827

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 06 November 2002.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-28 is/are pending in the application.
- 4a) Of the above claim(s) 5-7 and 11-26 is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-4, 8-10, 27 and 28 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.  
If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

### Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☐ All b) ☐ Some \* c) ☐ None of:  
1. ☐ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).  
a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_ 6) ☐ Other: \_\_\_\_\_

**DETAILED ACTION**

***Claim Objections***

1. Claim 1 is objected to because of the following informalities:

Claim 1, line 3, change "at lease one active or passive" to --at lease one another active or passive--.

Claim 1, line 6, change "to an active" to --to the active--.

Appropriate correction is required.

***Claim Rejections - 35 USC § 103***

2. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-4, 8-10, and 27-28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Beilstein, Jr. (reference cited by applicant) in view of Solomon (U. S. Patent 4,992,908).

As to claims 1 and 27, Beilstein discloses an electronic sub assembly (30-figure 2, column 4, line 22) as shown in figures 2-5 comprising

a circuitized laminated substrate (module 32, column 4, line 23) having top and bottom surfaces (19, 17-figure 2, column 4, line 29), and at least one edge surface (21; 33, column 4, line 29, and column 6, line 37) between said top and bottom surfaces,

at least one active or passive device (52; 70, column 5, line 10) mounted on said at least one edge surface,

at least one another active or passive devices (42, 38-figure 2) mounted on at least one of the top and bottom surfaces (19, 17),

a conductive lead (37-figure 3) embedded in the substrate (32) electrically connected to another active or passive device (70-figure 3) mounted on said at least one edge surface (33-figure 3), the conductive lead also electrically connected to the at least one device on the top or bottom surface.

Belistein does not disclose the edge surface between the top and bottom surfaces, which is beveled, at an angle between 30-60 degrees.

Solomon teaches a contact board (13, column 3, line 39) having a beveled edge (17, column 3, line 40) between top and bottom surfaces disclosed in figures 1-15.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have substrate including beveled edge at an angle of 30-60 degrees between top and bottom surfaces as taught by Solomon to employ the electronic sub-assembly of Belistein in order to provide facilitate precisely mating contact of module to module and also save space for the design.

As to claim 2, Beilstein discloses the electronic sub assembly (30) as shown in figures 2-5 wherein each of the active or passive devices is selected from the group including chips (38, 42).

As to claim 3, Beilstein discloses the electronic sub assembly as shown in figures 2-5 further including an electrically conductive via (via 40, column 4, line 51, and via 44,

column 5, line 2) extending into the substrate from each device (38, 42) on the top or bottom surface (19, 17) into contact with a conductive lead connected to an edge mounted device.

As to claim 4, Beilstein discloses the electronic sub assembly (30) as shown in figures 2-5 wherein the laminated substrate is selected from the group comprising: a single or multiple laminates of a ceramic module and a conductive layer.

As to claim 8, Beilstein discloses a printed circuit board (32) as shown in figures 2-5 having two spaced apart, generally parallel surfaces comprising

a top surface (19) and a bottom surface (17), an edge surface (21; 33) between said top and bottom surfaces,

a plurality of conductive leads (37-figure 3) embedded in the circuit board (30) parallel to the top and bottom surfaces (see figure 4-5) and terminating in one or more connection points along the edge surface (33),

an active or passive device (52; 70) mounted on said edge surface and electrically joined through at least one of said connection points to at least one of the conductive leads, and at least another active or passive devices (38, 42) mounted on the top or bottom surface electrically joined to the edge mounted device.

Beilstein does not disclose the edge surface between the top and bottom surfaces, which is beveled at an angle between 30-60 degrees.

Solomon teaches a contact board (13, column 3, line 39) having a beveled edge (17, column 3, line 40) between top and bottom surfaces disclosed in figures 1-15.

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have substrate including beveled edge at an angle of 30-60 degrees between top and bottom surfaces as taught by Solomon to employ the electronic sub-assembly of Beilstein in order to provide facilitate precisely mating contact of module to module and also save space for the design.

As to claim 9, Beilstein discloses the printed circuit board (32) further including a via (36) on the top or bottom surface, and coupled to a top or bottom mounted device (see an interconnection of figure 2), said via extending into the substrate into contact with a conductive lead connected to said edge mounted device.

As to claim 10, Beilstein discloses the printed circuit board (32) wherein each said another active or passive device is selected from the group including chips.

### ***Response to Arguments***

4. Applicant's arguments with respect to claims 1-4, 8-10, and 27-28 have been considered but are moot in view of the new ground(s) of rejection.

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### ***Conclusion***

5. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

6. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure. Fassbender et al., Beaman, and Belistein, Jr. et al. disclose related art.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tuan T Dinh whose telephone number is 703-306-5856. The examiner can normally be reached on M-F.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David L. Talbott can be reached on 703-305-9883. The fax phone numbers

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for the organization where this application or proceeding is assigned are 703-305-1341  
for regular communications and 703-305-1341 for After Final communications.

Any inquiry of a general nature or relating to the status of this application or  
proceeding should be directed to the receptionist whose telephone number is 703-308-  
0956.

TD  
December 30, 2002.

*Albert W. Paladini 1-8-03*  
ALBERT W. PALADINI  
PRIMARY EXAMINER